

WHAT IS CLAIMED IS:

1. A system for correcting twist in airfoil components having a twist angle, said system comprising:

means for twisting an airfoil component;

means for measuring the twist angle of said airfoil component;

5 and

means for controlling said means for twisting in response to said means for measuring to obtain a desired twist angle.

2. The system of claim 1 wherein said means for twisting includes a first fixture assembly for holding a first end of said airfoil component and a second fixture assembly for holding a second end of said airfoil component.

3. The system of claim 2 wherein said means for twisting further includes a rotary drive unit for rotating said first fixture assembly.

4. The system of claim 3 wherein said rotary drive unit includes an adapter that engages said first fixture assembly and a motor drivingly coupled to said adapter.

5. The system of claim 4 further comprising a gear reducer unit coupled between said adapter and said motor.

6. The system of claim 4 further comprising a torque sensing assembly coupled between said adapter and said motor.

7. The system of claim 2 further comprising a carriage capable of moving linearly with respect to said first fixture assembly, said second fixture assembly being mounted on said carriage.

8. The system of claim 7 wherein said means for measuring includes a gage mounted on said carriage.

9. The system of claim 7 further comprising a screw rotatively mounted adjacent to said carriage, a motor drivingly coupled to said screw, and a nut threadingly mounted on said screw, said nut being attached to said carriage.

10. The system of claim 2 wherein said first fixture assembly includes:

a base plate;

first and second support blocks mounted to said base plate;

a slide block slidingly mounted to said first support block;

a pneumatic cylinder unit mounted on said first support block, said pneumatic cylinder unit engaging said slide block for moving said slide block relative to said second support block;

a first jaw supported by said slide block; and

a second jaw supported by said second support block in juxtaposition with said first jaw.

11. The system of claim 10 wherein said first and second jaws are interchangeable.

12. The system of claim 2 wherein said second fixture assembly includes a jaw holder and a jaw attached to said jaw holder.

13. The system of claim 12 wherein said jaw is interchangeable.

14. A system for correcting twist in airfoil components having a twist angle, said system comprising:

a base having a lower portion and an upper portion extending vertically upward from said lower portion;

a horizontal plate supported by said lower portion;
a vertical plate supported by said upper portion;
a lower fixture assembly for holding a first end of an airfoil
component mounted on said horizontal plate;
5 a rotary drive unit for rotating said lower fixture assembly
mounted to said horizontal plate;
a carriage slidingly mounted on said vertical plate;
an upper fixture assembly for holding a second end of said
airfoil component mounted on said carriage;
10 a gage for measuring twist angle in said airfoil component
mounted on said carriage; and
a controller for controlling said rotary drive unit in response to
input from said gage to obtain a desired twist angle.

15 15. The system of claim 14 wherein said rotary drive unit
includes an adapter that engages said lower fixture assembly and a motor
drivingly coupled to said adapter.

16. The system of claim 15 further comprising a gear reducer
unit coupled between said adapter and said motor.

20 17. The system of claim 15 further comprising a torque
sensing assembly coupled between said adapter and said motor.

18. The system of claim 14 further comprising a screw
rotatively mounted to said vertical plate, a motor drivingly coupled to said
screw, and a nut threadingly mounted on said screw, said nut being attached
to said carriage.

25 19. The system of claim 18 wherein said motor is controlled
by said controller.

20. The system of claim 14 wherein said lower fixture assembly includes:

- a base plate engaged by said rotary drive unit;
- first and second support blocks mounted to said base plate;
- 5 a slide block slidably mounted to said first support block;
- a pneumatic cylinder unit mounted on said first support block, said pneumatic cylinder unit engaging said slide block for moving said slide block relative to said second support block;
- a first jaw supported by said slide block; and
- 10 a second jaw supported by said second support block in juxtaposition with said first jaw.

21. The system of claim 20 wherein said first and second jaws are interchangeable.

22. The system of claim 14 wherein said upper fixture assembly includes a jaw holder attached to said carriage and a jaw attached to said jaw holder.

23. The system of claim 22 wherein said jaw is interchangeable.

24. A method for correcting twist in airfoil components having a twist angle, said method comprising:

- clamping a first end of an airfoil component with a first fixture assembly, said first fixture assembly being capable of rotary motion;
- holding a second end of said airfoil component with a second fixture assembly;
- 25 measuring said airfoil component's twist angle;
- inputting the measured twist angle into a controller;
- using said controller to compute how much said airfoil component needs to be twisted to achieve a desired twist angle; and

rotating said first fixture assembly to twist said airfoil component to said desired twist angle, wherein rotation of said first fixture assembly is controlled by said controller.